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★ THIS MONTH ★

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WELLINGTON BRINK
Editor

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TREES HELP COTTON.—Frank Babek, Willow, Okla., finds that windbreaks return a profit of more than \$50 per bale on his cotton crop. The windbreaks yield more profit than the price of the land by protecting the soil from erosion and by moderating sudden temperature changes.

As head of the Greer County Cotton Growers Association, he has made a study of cotton crops and windbreaks and notes that his farm and neighboring farms with good shelterbelts like his have a cleaner and whiter class of cotton, which grades higher and brings an increased price. The belts protect the cottonfields from shifting sands that dirty the cotton in open fields and from the high winds which frequent the area.

—JAMES B. MCBRIDE

Editors are invited to reprint material originating in this magazine.



FRONT COVER.—This photo montage includes examples of farm woodlands throughout the country: upper left, second-growth pine in Southeast; top center, Douglas-fir reproduction in Northwest; upper right, farmstead windbreaks in Great Plains; lower left, maple sugar season in the Northeast; lower right, typical of hardwoods growth in the Lake States.

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Preface to this special issue on

Woodland Conservation

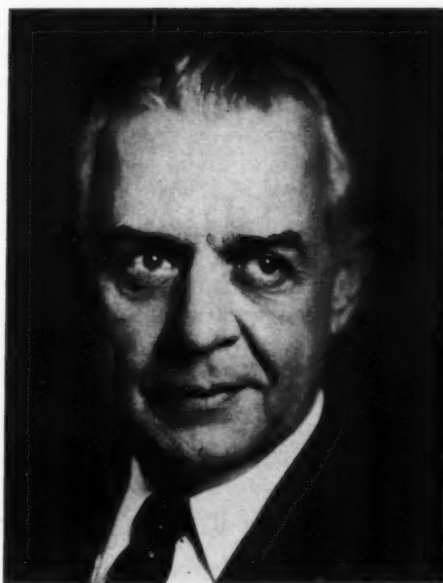
By T. B. PLAIR

Head Woodland Conservation
Soil Conservation Service

AS we use the term in the Soil Conservation Service, "woodland conservation" is the art and science of assisting landowners and operators to use land within its capabilities for wood production, as a part of an integrated program of soil, water, and plant conservation. This signifies, first, protection of land against soil depletion. It further signifies increasing yields, improving the wood crop, conserving water for use, and adding to the cash income of the landowner. It means a betterment of our national welfare through efficient, abundant production on a sustained basis.

The 4¼ million woodland owners could say: "America, we hold in our hand the productive potential for nine-tenths of your wood supply. We produced it in 1952, and we can grow much more for you than we did that year. Our woodlands are protecting your water supply by receiving it, storing it, processing it, and making a delayed delivery to you. We know that our woodlands have helped you with your recreation. You must also have admired their beauty. We believe that you want us to keep them green, keep them growing, and keep the wood rolling. We think you will help us do this by admiring them, protecting, and using their products."

It was a little more than 20 years ago that the Soil Conservation Service started working with landowners and operators on a coordinated approach to using their soil, water, and plant resources. At that time, in many quarters, the woodlot was synonymous with privately-owned forest lands. In Government publications of that time such statements as this appeared: "The woodlot is a good place for the farmer to use his spare time cutting fence posts and fuel for home use."



Mr. Plair

In those days millions of trees were being planted just to plug gullies or stop soil movement. There were no plans for those trees beyond that. But yesterday an eminent forester who has traveled around the world said: "You know, there has been a new birth in American forestry during the last 20 years. It is no longer just Federal land ownership and fire protection. Today there are 4¼ million landowners involved, and the job is primarily theirs."

If we examine our progress day by day it is sometimes discouraging. Yet when we look back over the past 20 years, we discover that we now have many aids to help us in woodland conservation that we did not have then. In the Soil Conservation Service we had just started the integration of technologies to get the coordinated approach in land use planning. At the outset specialists in engineering, soils,

agronomy, forestry, and biology had too little in common to work effectively as a team. Today we have soil scientists helping evaluate the productive potential of land for growing tree crops; engineers helping to get water level stabilization in woodlands; range conservationists helping determine livestock carrying capacities for woodland range, biologists working out forest-wildlife relationships, and others contributing in various ways. Federal and State Governments are furnishing specialized services in forest management and utilization. Private forest industries, both large and small, are directing much of their work to helping make private woodlands more productive.

There is no other single crop that gives us

in the Soil Conservation Service any better opportunity to work with so many people. The total wood crop that can be grown on the hundreds of millions of acres of America's woodlands would be a tremendous increase over present production, and therein lies our great challenge.

By this special woodland conservation issue of SOIL CONSERVATION Magazine we want to give credit to all technicians who have helped bring about the birth of new emphasis on woodland conservation. You should derive much satisfaction from helping landowners and operators make their woodlands produce more Green Gold.

Small Woodlands Add Up to Big Business

By ARTHUR R. SPILLERS

DID you know that our wood crop occupies more land on farms than any other crop?

We have known for a long time that the farm forests and other small woodlands had an important place in this country's overall forest picture. But not until after World War II did we learn just how important these small woodlands were. From the reappraisal of the Nation's forest resources that the Forest Service made shortly after the war ended we learned that actually three-fourths of all the private commercial forest land in the United States was in small forests (holdings of less than 5,000 acres). This country's commercial forest land area is nearly 460 million acres. About 116 million acres of this is in national forests and other public forests, Federal, State, county, and municipal. Over 343 million acres is in private ownership. Of the commercial forest land privately held less than one-fourth is in industrial or other larger classes of holdings.

Three-fourths—some 260 million acres—is in small woodlands. These small woodland properties average 62 acres each.

Commercial forest land means land that is growing commercially valuable timber crops, or is potentially capable of growing them. Nearly 140 million acres of this commercial forest land is in farms. And there is another 120 million acres of small woodland holdings in rural areas that are not parts of operating farms—small country estates, and tracts held by local businessmen, investors, widows, retired workers, and nonfarm owners.

"There is no other land use or crop which directly affects the welfare of more landowners," said T. B. Plair, woodland conservationist of the Soil Conservation Service, at a recent meeting of the Association of Southern Agricultural Workers.

Small woodland holdings are held by 3¼ million farmers and 1 million non-farm owners. These farm woodlands and other small woodlands are generally the most accessible forest land with respect to transportation and industrial markets. Generally, too, they occupy bet-

Note.—The author is chief, division of cooperative forest management, U. S. Forest Service, Washington, D. C.



Mr. Spillers

ter than average timber-growing sites. They are supplying a substantial part—probably more than two-thirds—of the wood products we use in this country today.

The woodland acreage in farms and other small holdings also exerts a marked effect on the extent and character of runoff and on the conservation of soil and water. Occupying usually the rougher and often the higher portions of farms, they can be a potential source of damaging floodwaters or a source of useful water supplies. When they are adequately protected from fires and from the compacting effects of too much livestock grazing, when their timber is harvested by methods that maintain the ground litter and the soil porosity, the woodlands are capable of absorbing and storing much of the water that comes as rain or snow. Woodlands in good condition can help a great deal toward effective natural control of acceler-

ated runoff and the associated movements of sediment and debris.

National Forests administered by the Forest Service protect some of the key mountain watershed areas—the headwaters of many of our major streams, the source of water to supply hundreds of cities and towns, power plants and industries, and to irrigate millions of acres of farmland.

But many local small woodland areas can also provide clean, well-distributed waterflows for farm irrigation. The rapid spread of supplemental irrigation in the humid East and in the coastal portions of the Western States has already imposed severe strains on locally available water supplies. The time is not far off when farmers will take a new look at their wooded areas. Our watershed management research is constantly developing methods of reducing wasteful runoff and increasing the yield of usable water from woodland areas. As the results of this research become better known, I am sure that in many localities farmers will accept water conservation practices on their woodlands as a profitable part of the farm business.

A large number of small woodlands are in rundown condition. Owners have let them be heavily overcut; they have been burned over; young trees have been destroyed or damaged and the soil packed hard by overgrazing. Many absentee owners have permitted their woodlands to suffer both in productivity and in water conservation potentialities as a result of mismanagement and neglect. The woodlands, farm and nonfarm, need careful handling to build up the growing stock. With such building up and with good management, the small woodlands of this country, I believe, could in the long run produce three times the amount of quality timber they do now.

The public forests and many large industrial forest holdings are managed by professionally trained foresters. But very few of the small woodlands have had the benefit of technical forestry assistance.

The Department of Agriculture and the States are working in a number of ways to provide increased aid on forestry matters for small woodland owners. The Department cooperates with the State agricultural colleges in

forestry extension work. The Soil Conservation Service encourages tree planting and other forest restoration and improvement work, and good forest management. Farm forestry was given a boost by the Agricultural Conservation Program. The Department of Agriculture cooperates with State forestry departments in a program for the production and distribution of trees at low cost for woodland and shelterbelt planting.

Individual, on-the-ground help is important. Each tract of woodland is different as to condition, kinds of trees, topography. The problems of one owner differ from those of another. No one has ever devised a simple set of rules or practices that will work either for all woodlands or for all owners.

A cooperative program to provide on-the-ground technical assistance is conducted under the Cooperative Forest Management Act of 1950. Although the Act makes no limitation as to classes or sizes of owners, the work is conducted primarily for the benefit of the small woodland owners. The Act also provides for technical aid to processors of primarily forest products.

At the present time there are 274 foresters in the Cooperative Forest Management Program. These men are employed by the State

Foresters. The Forest Service cooperates in training and inspection, and provides a part of the funds. Last year these foresters were able to reach 32,224 woodland owners. They are particularly happy to work with soil conservation districts and with farmers who have a farm plan, for under these conditions much of the preliminary work has been done by the Soil Conservation Service. The owner is already aware of the value of good woodland management. A forester can go into the woodland with an owner who has requested assistance and get right to work.

I am sure that I can speak for many of the State Foresters as well as for the Forest Service when I say thanks to the Soil Conservation Service and to the soil conservation districts for the help they are giving our foresters. And I know that the individual landowners also appreciate this help.

Nearly every small woodland can benefit by the application of some technical forestry. Most small sawmills and other wood processing plants also can use some technical help. So there is much to do. To provide technical assistance to 4¼ million woodland owners and more than 50,000 small wood processors is a stupendous task.

Money From Your Trees

By FRANKLIN BRADFORD

THERE'S gold in that little patch of woods over on the back forty!

Interest in tree farming—the growing of timber as a crop—is gaining throughout the country. Thirty-six states now have active Tree Farm programs under the American Tree Farm System. The system added more than three and a half million acres of woodlands last year.

Behind this increasing fervor for forestry lies the basic stimulant of good markets. Un-

less the farmer can sell his saw logs, his fence posts and his Christmas trees, he has little incentive to investigate woodlot management. For geographical reasons, there isn't always a local market for timber, yet the overall market outlook is bright.

Wood is already going into more than 6,000 items which affect our daily lives, and the technological experts tell us we are only beginning. The chemist's test tube holds the answer to many new uses for wood.

There are some 4¼ million "small" landowners in the nation today. They hold 57 percent of the country's forest land, and each year sell 700 million dollars worth of saw logs, pulp-

Note.—The author is assistant editorial director, American Forest Products Industries, Washington, D. C.

wood, posts, turpentine, Christmas trees, maple syrup, and other forest products.

Because these small landowners control most of the nation's commercial forest land, it is clear that increasing demands for wood open the door to greater opportunities for producing timber as a cash crop. The farmer who has paid little or no attention to his woodlot might well look into the advantages of forest management.

As stated, tree farming simply means growing timber as a crop. The American Tree Farm System is an industry-sponsored program through which good forest management is publicly recognized. When a landowner feels that he is managing his woodlot wisely, he may apply to his state Tree Farm committee, which will arrange to have the woodlot inspected. If the inspection by a recognized forester shows management measures up to principles of the American Tree Farm System,



This mature sugar pine is marked by paint gun for harvest. Note trees of varying ages in background. This tract is managed to provide continuing crops of trees. (Photo from Western Pine Association)



Mrs. Fred Gowdy, daughter of Frank Bennett, consulting forester in Baton Rouge, La. Bennett owns a 640-acre Tree Farm at Norwood, La., part of some 1,200 acres there in a pine Tree Farm.

the landowner gets a certificate, also a Tree Farm sign which he may display on the land.

Whether a landowner joins the American Tree Farm System or not, he may reap cash benefits from a well-managed woodlot. If he applies for Tree Farm certification and gets it, his woodlot then simply wears the "tag" "Tree Farm" and stands as an example to others. This way the tree farmer is encouraging other landowners to grow trees as a crop.

Under principles of the American Tree Farm System, the landowner must protect his woodland from fire, insects, and excessive grazing. He must harvest timber in a manner to insure continuous crops.

The American Tree Farm System is administered by American Forest Products Industries, 1816 N Street, N.W., Washington 6, D. C. Industry committees administer it in the various states. Those who desire information about the Tree Farm program in a given state may write AFPI in Washington. There is no membership fee or dues. To retain his certified status, the landowner must maintain good management of his woodlot. This is determined by periodic inspections.

The landowner who has never sold timber might begin by discussing his problem with a trained forester, one of some 15,000 in the country. The forester can cruise the

timber and determine steps needed for sound management. There's a good chance that the woodlot needs an immediate thinning. This means that diseased and crooked trees may be removed and marketed. Not only will this provide income for the farmer, but it gives the sounder trees more "growing room." The growth of these remaining trees is much faster than before the thinning.

As times goes on, the farmer may select mature trees for cutting, or he may cut others for pulpwood, fence posts, fuelwood, or general farm use. Once his "stock" trees have been established, he can figure on periodic harvests based on selective cutting.

Keeping fire out of the woods is of paramount importance. Years of careful management can go up in smoke if the farmer doesn't take every precaution against this No. 1 enemy.

Some of the industries have their own Tree Farm "families." Under the "family" plan, an

industry, such as a sawmill, provides free forest management services to a large number of smaller landowners in return for which the landowners may give the company first shot at buying the timber when it is mature. Some of the "family" plans are no less than gentlemen's agreements. To the non-resident landowner, the plan has many advantages. To date there are relatively few industries using the family plan, but those who are find it highly successful. It is a step toward stabilizing their future timber supply without the necessity of heavy land-buying programs.

Tree farming is basic to an overall land use program. Multiple land use is an inherent part of tree farming as practiced under the principles of the Tree Farm system. It means food and cover for wildlife. It means recreation spots, better fishing, and hunting. And it means better watersheds for lakes and streams.

A State's Role in Tree Farming

By C. H. COULTER

FLORIDA, long known for bathing beauties, citrus, and cattle, also is a leader in the farm forestry program.

Some 44 states, including Florida, have forestry departments to help conserve and utilize their woodlands. Forest fire control is well advanced. Growth and distribution of seedlings for reforestation has been going on for years, with a tremendous increase in the last decade. Cooperative forest management is the newest constructive activity. Management assistance for small-woodland owners is favorably affecting their pocketbooks and putting their woods in better shape for the future.

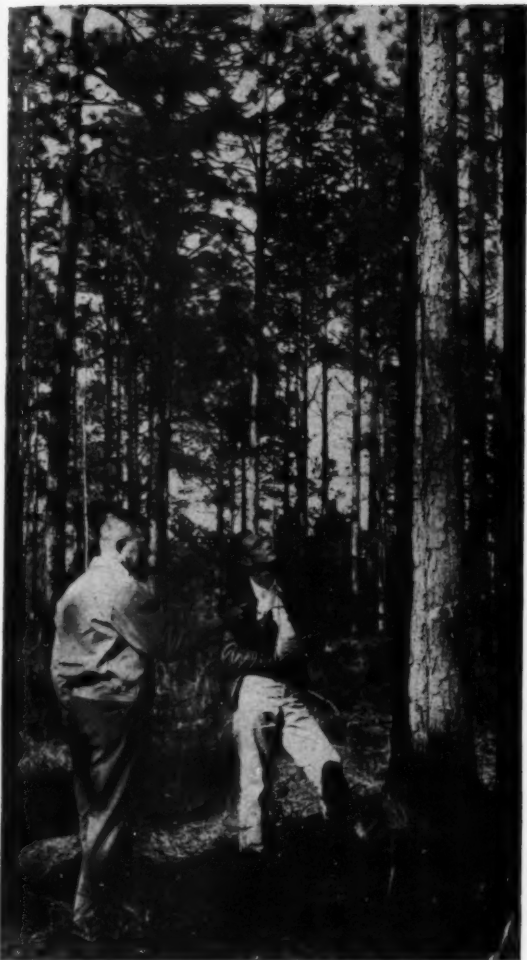
The Florida Board of Forestry, charged by law to conduct any work necessary to protect and build up the forest resources of the State, initiated the farm forestry program in 1940, with two projects involving five counties. This was in cooperation with the U. S. Soil Conser-

vation Service and the U. S. Forest Service. In the piney woods and swamps, education and assistance to private woodland owners by experienced professional foresters (commonly called farm or county foresters) has grown as a result of public demand, so that today the Florida Forest Service employs 14 such men to work in 32 counties.

In Florida an individual county or a group of counties, depending upon timberland acreage and ownership, contracts with the Florida Board of Forestry to share the cost of a farm forestry project on a 40-60 basis. Much of the credit for the continuing expansion of this program is due soil conservation districts and employees of the Soil Conservation Service. The districts, through their cooperators, frequently have led in the establishment of new projects.

In order to carry on a complete and effective program of soil, water, forest, and wildlife conservation, with a minimum of duplicated effort, the Florida Forest Service and Soil Conservation Districts have entered into memoranda of understanding.

Note.—The author is state forester, Florida Board of Forestry, Tallahassee, Fla.



Marking and estimating is important. As a team, the farm forester selects and tallies while the farmer marks the trees to be cut.

As a result of cooperation, farm foresters are often in attendance at district meetings. They prepare the woodland phase of the farm plan and operate and schedule district forestry equipment, in addition to providing direct technical assistance to district cooperators.

Reforestation of 4 million acres of land best adapted for timber crops is necessary to build Florida's forest resource. Though the State's nursery production of pine seedlings has risen to 50 million, the demand for seedlings still has not been met. As a result, during the past 2 years many large seedling orders had to be reduced 40 percent to afford equitable distribu-

tion. However, orders from small private woodland owners requesting 25,000 seedlings or less were filled without reduction.

A typical small-planting cooperator is likely to order his seedlings through the local district office. He may also rent a district-owned mechanical tree planter for a small charge. At planting time, the farm forester likely will deliver the machine, instruct the cooperator how to plant pines, and later return to collect the rental fee.

Over 40 percent of the State's 20 million acres of forest land is owned by 55,000 farmers and other small forest landowners. The rest, being in large industrial holdings or public



Farm forester demonstrating to landowner the proper application of chemicals used to poison undesirable species.



Farm Forester Garland points out the merits of spiral gutters and double-headed nails to J. Q. Agner.



Tree-planting machine owned by Jefferson (Fla.) Soil Conservation District being demonstrated by Farm Forester Herndon and Claude Groom, technician aid.

agencies, is generally being protected and managed for continuous production.

Much of the wood to sustain and increase the production of Florida's \$323 million wood-using industry must come from the smaller woodland holdings. On-the-ground education and assistance in proper land use and forest management is essential. Industrial and consulting foresters will continue to contribute to the accomplishment of the job. But for years to come the Federal, State and county governments must continue to lead the way, through the farm forestry program.

Requests from woodland owners for assistance by the farm forester are received from various sources; but principally through SCS technicians, county agents, district supervisors, industrial and consulting foresters, loggers, and other members of the wood-using industries.

Before contacting the owner, the farm forester generally studies the land capability map and farm plan. Accompanied by the owner, or his representative, he makes a complete on-the-ground study. All information pertinent to proper woodland planning is obtained, including site capability, degree and type of stocking, growth rate, protection measures, and merchantability.

Complete recommendations are provided the owner. They include a description of the silviculture, management, protection, and marketing measures necessary to assure maximum and continuous forest production. The recommendations, accompanied by a woodland map, are designed for inclusion in the cooperators' conservation plan. They are aimed at attaining the best possible forest-management practices and are tempered to suit the owner's economic status and yet improve the woodland.

In order to insure getting the right start on these practices, farm foresters may spend up to 3 days assisting the owner on such activities as poisoning undesirable species, tree planting, control burning, and marking and estimating timber for harvest.

Frequently an owner's prime motive in obtaining the services of the farm forester is to obtain assistance in marketing timber. Recently a Gadsden County farmer with a 14-acre woodlot requested such assistance and stated that a local sawmill operator had offered \$500 for all the timber. The woodland contained two types of longleaf pine—one area of mature trees already worked-out for turpentine purposes with a scattering of reproduction, and another area of dense stand of 6-inch to 10-inch trees. It also included a small area of loblolly

pine, with considerable canker disease, along a small creek or drain.

Farm Forester Herndon, assisted by the owner, marked and estimated for a thinning of the loblolly and young longleaf. The mature longleaf stand was designated for a seed tree cut. Herndon's estimate of the sawtimber to be harvested was 36,000 board feet, which the owner sold as stumpage in a lump sum to the highest bidder for \$1,260. Following the saw log operation, approximately 36 cords of pulpwood were marked and sold for \$216.

After cutting was complete, the area was control-burned for control of brown-spot disease and to facilitate establishment of reproduction.

This owner, while realizing a return of over \$105 per acre, improved the condition of the stand, which will require another thinning in 6 to 8 years.

With Florida the nation's second largest producer of gum naval stores, the farm foresters encourage small woodland owners to include gum farming in their woodland management.

J. Q. Agner, Madison County farmer, contacted Farm Forester Wyman Garland several years ago regarding marketing some longleaf timber. After studying the timber stands, Wyman suggested delaying the thinning for 6 to 8 years to obtain maximum growth. However, he encouraged and taught Agner to gum-farm by selective cupping. Using the most modern means, including acid treatment, bark chipping, double-headed nails, and 2-quart cups, Agner has worked 2,000 faces for the past 2 years. In this time, gum-farming has yielded a net income of \$1,140, or \$0.285 per face per year. After 6 years, with normal increased growth, these worked-out trees will be harvested for higher yielding products such as poles or saw logs. Then, Agner's woodlot will permit selective cupping of several thousand more faces—thus, a continuous operation.

Because effective forest fire control is essential to forest management, the Florida legislature in 1935 passed a law providing for county forest fire protection. Under it, the State and individual counties contribute to the support of the county fire control organization, which is supervised by the Florida Forest Service.

Land under forest fire protection has increased gradually so that at the present time 70 percent of the privately owned forest land is protected from fire. In 1953-54 only 1.3 percent of Florida's protected land burned, while 43 to 57 percent of the unprotected land burns each year.

In 1952 Florida's consumption of forest products amounted to 3,698,000 cords with a wholesale manufactured value of \$323,161,000. By 1970, with the increased demand for wood and wood products, tree farmers, large and small, will be called upon to produce an additional 1,800,000 cords annually to supply a \$600 million forest industry. To achieve this goal, they will need to practice proper forest management and protection, and to call on all private and public foresters to provide technical knowledge and assistance.



Jackson and trees.

ONE-ACRE RECORD.—W. R. Jackson, a negro farmer, of Bienville Parish, La., in 1941 pulled up 1,000 native loblolly pine seedlings and planted them on one acre of his idle land. Trees on this acre were marked for cutting in 1953. The D-plus-6 spacing rule was followed in marking for harvesting. Jackson cut the marked trees and harvested 6 cords of pulpwood for which he received \$51. There were about 12 cords left in trees not removed. These remaining trees were the best and of highest quality. They should increase 2 inches in diameter and be ready for another thinning in 1959.

—FORD FALLIN

MORE TO COME.—Space limitations precluded the use of certain articles in this special issue. This material, helping to round out the farm woodland story, will appear in future months.

Woodland Conservation in the Districts



Second-growth ponderosa pine marked for an improvement cutting. Trees painted with a "C" are to be harvested.

West

IT is no longer a problem to get farmers and landowners in the Western States to cut in their woodlands. The greater problem is to help these same owners to follow good woodland management practices which keep their lands productive.

The good outlets for wood products have accelerated the demands for raw material from private lands in the West. Many new wood-utilization plants have been put in operation, and utilization methods have greatly improved. These factors offer many advantages which facilitate an improved woodland conservation program. These same factors do, however, create difficulties in getting farmers to follow sound woodland practices. It is hoped that these problems are temporary in nature and that landowners will come to realize the value of their woodland crop and the necessity of following practices that will result in continuous tree crop production.

Slow but steady progress is being made. Since 1939 the Soil Conservation Service has written 20,000 plans with soil conservation district cooperators in the Western States. These plans contain technical recommendations covering correct woodland conservation practices. The Service has assisted in the planting of 30,000 acres of trees in these Western States. Technical assistance in the application of these practices has been rendered on approximately 1 million acres of woodlands consisting mostly of second-growth stands.

The first two bank loans under the Forest Credit Law were made in 1954 on farms on which the SCS had helped the landowners to make woodland plans.

Since 1946 the Service has carried on soils-forest site correlation studies. The first few years the studies were confined to the Douglas-fir region. In 1952 the studies were expanded to the yellow pine areas. These are the first studies of this type in the West. As a result of these studies the Service is able to improve greatly its technical recommendations for improved woodland conservation practices.

The planting of field windbreaks and shelterbelts has slowed down considerably in the last few years. This is partly due to the lack of labor on the farms and partly to the difficulty of obtaining suitable and sufficient planting stock. It has become increasingly difficult to obtain planting stock in some states and to obtain a variety of stock in all the states. This condition has caused Service technicians to moderate its emphasis on this phase of the woodland program. In a few states where the game habitat division of a State fish and game department is entering into cooperative agreement with Soil Conservation Districts, the planting of field windbreaks is increasing.

In the Western States over 50 percent of the total land area is in forests. The ownership of the forested lands is varied and intermingled between Federal, State, large company, large private, and small private holdings. The majority of the second-growth holdings are under private, often small, ownerships. The vegetative cover on such lands ranges from one species to a wide variety of species in complex relationships. Due to old methods of cutting and past management practices, these second-growth stands are in various degrees of stocking and occupied by brush and inferior species. In the dual-use forested areas, lands are still largely considered for their range value and not for their timber value. Old customs and habits of burning the woody vegetation to convert the woodlands to grasslands are still followed in many areas. These are but a few of the land use problems that the Service shares responsibilities for in carrying out the woodland phase of soil conservation in the West.

—ORLO W. KRAUTER

Southeast

THE Southeastern States, from North Carolina to Texas, include all but some fringe areas of the important southern pine belt. Here are produced 30 percent of the lumber and 60 percent of the pulpwood for the entire country. More than half of the land is woodland. No wonder that getting woodland into condition for high production and keeping it that way is of prime concern to soil conservation districts throughout the Southeast!



Here timber was marked and selective cut made for pulpwood in 1940. In 1945 a selective cut for saw logs was made. Regular returns have resulted netting more than \$7 per acre per year since 1939.

About one-third of the woodland is owned by big lumber and paper interests. Most of these have their own staffs of foresters and are doing a very satisfactory job of protection, reforestation, and timber management.

Not so with the owners of the other two-thirds of the woodland. These are farmers, doctors, lawyers, merchants, ranchers, and other "little" investors who own a few acres or a few thousand acres with the hope that some day it will pay off. They don't, for the most part, know quite what to do to hasten the payoff. It is surprising how many of them are eager to learn.

These smaller woodland owners (more than 99 percent of all owners) are the woodland problem in the Southeast. The woodlands themselves present no insurmountable problems.

How to reach people with a woodland program they could understand and practice was the big question which the Soil Conservation Service had to answer or give up its ideal of coordinated land use.

Forestry techniques usually had been designed for application by professional foresters. The thinking of the smaller woodland owner required a translation of technical language into terms he could understand. He is accustomed to handling his own operations with livestock and field crops and, with rare exceptions, does not see why he cannot do the same with his woodlands. The alternatives were to help owners manage their

own woodlands or see all but the exceptional jobs go undone.

The Soil Conservation Service chose to help. It came up with prescriptions simplified as to language but sound technically. The program, which has met with wide success, is as follows:

1. *Protect woodlands from destructive burning and from destructive grazing.* The Soil Conservation Service recognizes certain advantages of both controlled burning and controlled grazing. Uncontrolled burning is still so prevalent, however, that the advisability of controlled use of fire is a question to be weighed most carefully.
2. *Plant seedlings of adapted species* on areas that are not likely to become stocked naturally within a reasonable time. This includes planting of open fields and scrub areas that are remote from seed trees of desirable species, and occasional windbreaks.
3. *Thin dense stands of commercial trees*, taking out the worst, to give the remaining trees space to grow for a short period of years.
4. *Harvest crop trees* at a rate designed to allow time for them to attain sawlog sizes. This is done by counting the trees themselves, and they are taken in groups large enough to leave adequate space for a new generation of trees to start.
5. *Salvage merchantable trees* that are dead or dying, or hopelessly damaged by fire or storm.
6. *Release desirable seedlings* that are overtopped by culls, by girdling, poisoning, cutting, or otherwise deadening the culls.
7. In addition, an attempt is made to divide the woodland into the number of fields required to give the owner a chance to operate one field each year. This tends to equalize the farm labor requirements, equalize annual income, and minimize taxes. By working in the woods every year, the owner keeps his hand in and can improve operations through experience, whereas if he cuts timber only every 20 years or so he tends to forget how to do the job.

So much for the treatment of the woods itself. This approach has been used long enough to prove that any woodland owner *can* do a satisfactory job of managing his own woods. The number who are eager to learn exceeds the facilities available for teaching them.

One of the most heartening things is the willingness of so many people and organizations to cooperate with district supervisors in meeting the needs of the land for woodland treatments. There are many examples of state forestry organizations, extension foresters, bankers, merchants, newspapers, wood using industries, schools, and public spirited citizens in every walk of life who pitch in and give freely of time and money to advance the productive use of woodland areas. Without their help the districts could not possibly show such excellent results in the planning and treatment of woodlands.

—H. C. MITCHELL



Northwest corner of 20-acre field in Burt County, Nebr., which is completely enclosed by windbreaks.

Great Plains

FARMERS and ranchers in soil conservation districts in the Great Plains are working in their woodlands and planting trees in ever-increasing numbers.

For example, western Montana soil conservation district cooperators are a part of a huge Christmas tree industry which has recently developed in that area. They are also harvesting greater quantities of saw logs, posts, and poles. Income from these sources is steadily increasing and contributes materially to the economy of the region. Portable sawmills and chain saws are a great aid in the orderly harvesting of wood products.

Woodland areas in the Rocky Mountain States are famed for their multiple-use and have high watershed values. Here, too, Soil Conservation Service technicians are working with other agencies and with private woodland owners to develop interest and appreciation of trees, and to assist cooperators in the use and conservation management of their woodland acres. As the country's economy grows and timber supplies decrease, increasing uses will be found for woodland products in these areas.

The same is true in Wyoming's Big Horn country and in the Black Hills, where Calvin Coolidge once cast for the wily trout. What would these mountains and hills be like without their protective mantle of verdant pine? Our nation's soil conservation districts are helping to preserve this great resource for future generations.

From the eastern foothills of the northern and southern Rocky Mountains to the panhandle country of Texas and Oklahoma, and north and east across the rolling prairies of Kansas, Nebraska, and the Dakotas, there lies a vast rich ranching and farming area—the Great Plains—where the climate is rigorous and, at times, severe. Tree growth is sparse. Early settlers planted trees for protection against winds and snow, and this practice has continued to the present day. Soil conservation district supervisors here are recommending windbreak plantings as a conservation practice in 580 soil conservation districts, designed to protect soil, crops, livestock, farmsteads, and wildlife. It is one of the most useful and popular practices in the Great Plains. District-operated mechanical tree planters have contributed largely to the acceleration and success of this work.

Along the eastern fringes of Texas and Oklahoma, an increasing number of people are turning to the use of land for the production of posts, poles, pulpwood, and saw logs. Woodlands once considered worthless are proving highly profitable. Annual net returns of \$12 to \$15 per acre are not uncommon.

Soil conservation district supervisors and cooperators everywhere in this vast 10-state area are showing wisdom in long-range planning of land use and in the management of all the land—including woodlands.

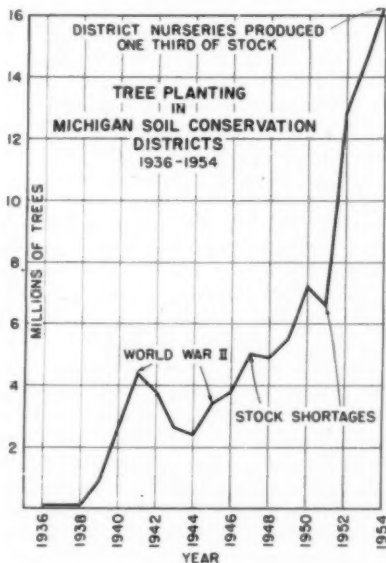
—A. E. FERBER

North Central

DOMESTIC livestock is the greatest single source of damage to hardwood timber in the Upper Mississippi Valley States. Neither fire, insects, nor disease are so destructive. The last Census of Agriculture, however, discloses that woodland grazing is on the decrease. Using land within its capabilities and the development of better pasture and feeding methods have resulted in the removal of livestock from 3 million acres of woodland in the 15-year period prior to 1950.

Farm planners in soil conservation districts have had much to do with this favorable trend because they have emphasized two money-saving facts: (1) good livestock deserves better feed than can be found in woodland, and (2) it is less expensive to maintain a fence around 4 acres of improved pasture than 40 acres of pastured woodland. Yet both have the same carrying capacity.

Tree planting, too, has made progress. Here again the land capability concept has played an important role. Class VII land means permanent vegetation; in the humid sections of the country it means trees. Constant repetition of this simple fact has brought some phenomenal results in states like Michigan where col-



operators in soil conservation districts are now planting 15 to 16 million trees every year.

These trees are not gifts. They are purchased by landowners. In Michigan about one-third come from nurseries owned and operated by the directors of districts. As one farm planner put it, this is "tree-roots democracy."

Woodland improvement as an accepted practice on farmland also is taking hold. New developments in tree-killing chemicals and tools for girdling have made possible easier and more acceptable means of removing weed and cull trees, thus releasing valuable reproduction from competition and providing a thinning for rapid growth.

Directors in a few districts which have large areas of woodland needing improvement, have purchased gas-powered girdling machines for rental to cooperators. These machines quickly expose a band of sapwood around large cull trees, after which the exposed wood is treated with a solution of either 2,4,5-T or Ammate.

The simple but fundamental woodland practices which have been installed on farms in districts came about as an expression of a philosophy by a former SCS woodland conservationist, John F. Preston. Years ago, as head of what was then the forestry division in Washington, and supported by his Chief, Hugh H. Bennett, Preston said: "The first and most important jobs to be done in farm woodlands are farm jobs, not forestry jobs. If the work is to be done, the farmer will do it in the same way he handles agronomic and other conservation practices. Specialists are needed in various technical fields, but mostly they are in the background, and their technologies are funneled through a single man—a farm planner. The planner integrates all into a workable conservation plan, and guides the landowner toward a coordinated program of accomplishment."

—STANLEY S. LOCKE

Northeast

TIMBER-R-R! This is the alarm call of the logger, echoed first in northeastern woodlands. It foretold the harvesting of another tree. As echoes are absorbed by time and space, so too were the tree crops within the northeastern region. To build cities and meet the demands of an expanding industrial empire the first settler, even as today's farmers, provided trees to be converted into products needed by a society restlessly seeking goals that demanded the exploiting of natural resources. Gone is the pristine tree wealth we once knew; remaining are millions of acres of wooded land, potentially productive, awaiting the attention of business- and conservation-minded owners. The production of merchantable tree products can be more than doubled if the farming of woodland acres receives attention comparable to that directed to grassland and plowland.

More than a third of the farmland in the Northeastern States is growing trees. Eighty percent of these acres, because of their topography and soils, are best suited to the continued growing of tree crops. The



Technician and landowner determine which trees are to be harvested.

productive maintenance of 20 million acres of woodlots lends balance to our agricultural economy and will provide many social returns, not the least of which is their influence on wildlife.

To what extent farmers and others are managing their wooded land is a moot question. Accepted standards are lacking. It is known, however, that through ignorance or indifference, capital values, as represented by sound, straight trees of valuable species, have been greatly reduced. Historically, farmers and loggers have "taken the best and left the worst." Culls—the unwanted trees—remain. Conservation management seeks first the removal of these unmerchantable stems.

It can be noted that the informational programs of various agencies, directed at farmers and other woodland owners, are stressing to good effect the fact that trees are a crop and respond to selective management just as do other crops. Farmers are beginning to understand that conservation methods applied to their tree crops are comparable to the management of their dairy herds—they weed out the low producers (culls and runts) and retain the high producers.

The onsite, direct and personal relationships of technicians and landowners that characterize the programs of soil conservation districts are in large part responsible for the increased acreage of woodland and increased tree-crop harvest values in the last 15 years.

From the Virginias to Maine, there is an increasing number of Tree Farmers. Continuing cooperative efforts of Federal, State, and private agencies will result in reestablishing capital values on an ever increasing acreage of woodland so as to supply our needs for products manufactured from tree crops.

—A. C. MCINTYRE

An Important Conservation "Tool"

By W. F. HALL

IN the soil conservation district program trees are more than producers of farm income, more than suppliers of raw materials to many industries, and more than a part of the natural beauty of the landscape.

Trees are among our best and most important conservation "tools."

In the upper reaches of our watersheds, forests with their green canopy above and their absorbent litter beneath are natural flood deterrents. Water trapped in the forest mat recharges ground water, and helps to keep streamflow dependable.

Like any other "tool" or piece of equipment, trees must be managed and maintained to be most effective.

Next to soil and high rainfall, trees are the greatest natural resource of the Southeast and other regions that can grow them well. Yet we were late in learning this important fact. We cut, burned, and cleared our forests shamefully. Much of our topsoil is in the oceans or above our dams, because we stripped off the woods cover that nature put on our steeper lands.

Why we abused our virgin forests and the soil that grew them, and who is to blame, is now beside the point. What really matters is that we now know how to manage and use wisely our remaining stands. We know how to restore trees on land that never should have been cleared. We're *doing* these things—not so fast as needed but at an increasing rate every year.

Of even greater importance to landowners and to the nation is the fact that we are doing this job within the framework of our democratic traditions. We who own and operate the land also own and operate the soil conservation districts that cover more than 9 of every

10 acres of farmland in the Southeast. Each of the 492 soil conservation districts in the Southeast has as its purpose the conservation and wise use of land and water resources, including land that is or should be in trees.

Of course, a farmer can plant or keep trees in fields safely suited for row cropping, if he desires. Or he can have forests on land that will grow grasses but not cultivated crops. But land too steep or too eroded for any combination of conservation measures except woodland use and management, must be in trees if the owner expects this land to be saved and to make money for him year after year.

Millions of acres in the Southeast will be safe from erosion and will stop creating flood and silt hazards only when in trees. These acres will never add appreciably to farm income until productive woodland again covers them.

These things I know from personal experience, as well as from observation. I'm in the lumber business. On various occasions I've been able to cut lumber off my own land to help me over hard times due to drought or other difficulties, to help absorb losses from the de-



On many farms the sale of saw logs adds to gross farm income. Using his own labor and equipment, a farmer drags logs to a truck-loading platform where a buyer will pick them up.

Note.—The author, a lumberman and farmer, is chairman of the Piedmont Soil Conservation District, a member of the Georgia State Soil Conservation Committee, and a director of the National Association of Soil Conservation Districts. His farm near Sparta, Ga., contains about 1,600 acres of wisely managed pine forest.



As salable trees are harvested young ones, well formed and of the right species, take their place. This is the basic rule for conservation management of tree crops and for maintaining woodland in a productive condition.

cine of cattle and other farm prices. Also, as a lumberman I've been able to buy timber from other farmers in need of supplemental income. The timber sometimes enabled these farmers to clear the mortgages from their lands, and in some extreme instances actually saved their homes for them. These timberlands were left in a growing productive condition. They were cut for sustained yield, were properly thinned, and were left with a good stand of young trees.

One of the best features of woodland, under good management, is that it is a rapidly renewable resource. It works 24 hours a day when assigned to replace crops formerly grown on land not safe in grass or row crops.

I actually have seen cases where farmers had lost everything except their land. They had to move away to other jobs, but continued to pay taxes on their farms. After a period of time, they found out that this was the best in-

vestment they could have made. The trees on their abandoned land grew into most profitable stands of pulpwood and saw timber. At the same time they increased the fertility of the land. The dividends would have been still larger, of course, had the tree stands had the benefit of personal management and protection.

Our soil conservation districts are encouraging our farmers to plant trees wherever trees will do best. The Soil Conservation Service helps us to make our soil conservation plans technically correct and sound, including proper methods of fire protection, planting, thinning, sustained-yield cutting, and marketing, in conjunction with the experience, research, and other help of State and Federal forest agencies.

We feel that our soil conservation districts have available the facilities and the will to give all our farmers whatever is necessary to succeed with forest management—one of the most important tools in proper land use.

Four Points on Cutting



Point 1.—*Thinning* to D-plus-6 spacing is illustrated on the farm of Karlton Kemp near Texarkana, Ark.

By H. C. MITCHELL and J. M. CASE

DURING the past 15 years a large number of southern farmers cooperating with their soil conservation districts have learned to increase their regular cash income by managing their own woodlands. Many now get annual income from their woodland just as regularly as from cultivated fields and pastures. On the average southern farm such integration of enterprises means, in effect, that they have increased their productive acres by some 50 percent.

One big reason for the steadily increasing acreage of owner-managed farm woods is the development of a tree cutting system that is technically sound, yet so simple that any woodland owner can learn to use it in a short time. It is a "four point cutting procedure" developed by Soil Conservation Service technicians

as a solution to the problem of interpreting forestry techniques for layman use.

According to this procedure, there are four basic reasons for cutting a tree: (1) to thin or space the stand; (2) to salvage dead or dying trees; (3) to eliminate worthless weed trees, and (4) to harvest crop trees.

Any woodland owner can learn the underlying principles after a little coaching in the woods. As a part of the coaching, the owner is given some rules for guidance in marking trees to be cut, such as cutting the less desirable trees first, in order to build up the quality of his growing stock.

Salvage is, of course, the most obvious of the four reasons. Only a minor percentage of timber trees need to be salvaged but the item is not to be ignored in the business of making money from woodlands. Many merchantable trees are killed in the course of a year or damaged to the point where they make little or no growth and may die at any time. Insects, ice

Note.—The authors are woodland conservationists, Soil Conservation Service, at Athens, Ga., and Hope, Ark., respectively.

breakage, lightning, fire, disease, wind, and sometimes drought or flood all take their toll. In the course of a rotation of trees, some 50 to 75 years, such losses in any given stand of timber could make the difference between very attractive profits or mediocre ones if the salable trees are not salvaged.

Thinning of dense stands is simply to give the better trees "room to grow but none to waste." Over the life of a fully stocked stand of southern pine, about two-thirds of the merchantable volume is derived from thinnings, so this is a most important item in proper management.

Technicians have learned to define the correct spacing of southern timber as "D plus 6," wherein "D" is tree diameter and 6 is an added factor to give average distance in feet between trees. Thus trees 10 inches in diameter should average 16 feet apart; 15-inch trees should average 21 feet apart. Spacing in stands of trees in all timber types in the United States follows a D-plus-X formula. A few others, like eastern upland hardwoods, Lake States jack pine and western yellow pine could use the same D-plus-6 formula for thinning as is used

in southern pine. The others mostly grow at closer spacings. The minimum spacing for dominant trees in any type can be determined from normal stand data published by the forest experiment stations. Simply divide 43560 by the number of trees at a given diameter (D). This gives the square feet of growing space required per tree. The square root of that figure gives the average spacing between trees in feet. Then subtract D and you have the value of X in the D-plus-X formula. Plotting many such figures on graph paper will show the species pattern. Another easy way to find the value of X is to plot numbers of trees per acre over diameter, draw in the average curve and proceed as above for average values read from the curve. When the value of X is established for full stocking of dominant trees, add 2 or whatever you like for spacing after thinning.

Thinnings are made at fixed intervals, usually from 5 to 10 years. The reason is a simple one, although not generally recognized. A given site has a certain capability for producing tree growth. The rate of tree growth, in turn, directly affects the number of years it takes for



Point 2.—Release of desirable young pine is effected by girdling cull hardwoods on the farm of J. W. Scales near Camden, Ark.

a timber stand to grow after a thinning until it needs thinning again. Although there is already a workable knowledge of the relationship between soil and tree growth, a survey by Soil Conservation Service technicians is being made throughout the South to reduce the subject to a scientific basis.

Without the D-plus-6 specification for thinning, the time interval between cuts would remain an indefinite figure, manageable by foresters using indirect methods but too vague and uncertain to form a basis for teaching the farmer how to go about the job of woodland cutting.

Release cutting is the removal of unmerchantable cull trees that are overtopping desirable young trees or seedlings. The worthless trees may be eliminated in a number of ways, such as girdling, cutting, or chemical treatment of foliage or stem. Girdling is most common, but chemical treatment is becoming more popular and holds great promise for the future.

The past practice of cutting only the better trees and leaving the culls to grow and produce seed has been a major factor in the deteriora-

tion of southern woodlands. Something like 9 of every 10 acres have a more or less acute weed tree problem, so the release cutting practice has wide application. Demonstrated by the forest experiment stations, its popularity has been enhanced by Soil Conservation Service technicians in many soil conservation districts.

The crop tree cut, as used by the Soil Conservation Service, is really the key to the workability of the so-called D-plus system. It not only controls the length of the rotation but in the many understocked woodlands it is the only commercial cutting that can be done. It works like this: (1) The technician makes a tentative decision as to how big a tree the soil will produce before growth falls off from old age; (2) then he calculates how many trees of that size there could be to the acre: $\frac{43560}{(D+6)^2}$; (3) from a table supplied to him, he finds about how old a tree of that size will be if grown with good management; and (4) in the last step, he calculates how many crop trees to cut per acre per year to come out even on the deal. This is simply $\frac{\text{No. of Trees}}{\text{Age}}$. For example, step 1 points to 22-inch trees; in step 2 he calculates



Point 3.—Salvage of wind-thrown trees is illustrated on the Smith Foster farm near Magnolia, Ark.



Point 4.—*Crop tree harvest to create openings for reproduction is illustrated on the farm of Arl Hilderbrand, near Prescott, Ark.*

that there are fifty-six 22-inch trees per acre; in step 3 he finds that the 22-inch tree is 56 years old; finally, he divides the number of trees, 56, by the age, also 56, and knows that if he takes his crop trees at the rate of one per acre per year, in addition to thinning, he will be in the business of growing 22-inch trees forever on that particular site.

The example sounds over-simple but the fact is no more complicated. When all the calculations for all soils are made, it has been found that taking crop trees at the same rate, one per acre per year, produces sawlog sizes on any commercial pine soil. The size of the crop tree varies from 17 inches on the poorest soil to 24 inches on the best. The answer of "one" is satisfactory everywhere, however, and the simplicity of the prescription is a real boon to those trying to teach a satisfactory brand of forest practice to the smaller woodland owners. The fact that the same prescription is applied to all soils does not mean that yields are the

same from good and poor soils. Far from it. The range of potential yields is from 300 board feet per acre per year on the poor sites to 1,200 board feet on the best sites. The potential yield for average sites in the South is from 700 to 800 board feet.

Crop trees are taken in groups so as to create openings about 100 feet across. Such openings are needed for a new generation of trees to start. Eventually, trees of many ages and sizes are present, with just the right number getting ripe to harvest as crop trees at each cutting.

The smaller owners are the ones most in need of help. The larger ones have enough timberland to justify their own staffs of foresters. However, those who do their own woods work, just as they do the other farm jobs, are finding that the four point cutting program of the Soil Conservation Service gives them the help they need: (1) *thin*, (2) *salvage*, (3) *weed*, and (4) *harvest* crop trees by count. By dividing the woodlands into 5 to 10 compartments and working one each year, they derive the additional benefits of annual income, equalized labor load, and reduced income taxes.



COLD WEATHER CONSERVATION.—An unseasonable, 4-inch blanket of snow held no terrors for a hardy crew of tree planters supervised by the Allegany County (N. Y.) Soil Conservation District. Plantation of Scotch and Austrian pine seedlings on a farm at West Almond went ahead in spite of a late March storm. Foresters claimed the increased moisture would favor the young trees. Sticking to a well-organized schedule each spring, Allegany County has reforested 20,000 acres in the past 12 years and established national records in improved soil and water conservation, flood control, recreation, and Christmas tree production.

Windbreaks for Better Farming

By ARTHUR E. FERBER

DURING the past 20 years there has been renewed and widespread interest in tree planting, directed toward conservation of soil and water and the reforestation of lands best suited for woodland purposes. The planting of windbreaks in the Great Plains and other parts of the country has been encouraged by many State and Federal agencies and practiced by thousands of enthusiastic landowners.

Many early settlers when clearing woodlands in Illinois, Iowa, and elsewhere, left strips of native timber adjacent to farm buildings and fields for protection and shade. Others planted narrow strips of trees. During the migration to the treeless prairies of the Great Plains, many settlers planted trees for protective purposes and to alleviate the monotony of the landscape. Legislative acts were passed by the Government to encourage more tree planting, such as the Timber Claim Act and state tree bounty acts.

Many such plantings, in 10- to 20-acre block type designs, served to provide fuelwood and other products for home use, in addition to the protection afforded farmstead, livestock, and fields. Other types, such as the single row Osage-orange plantings, served as fences, and later provided fence posts.

Some of these old plantings still survive, but the vast majority died or were cut away for farming. Often the planting stock was obtained from eastern sources and the trees could not endure the rigorous Great Plains climate. Many were neglected, to fall by the wayside.

When large scale windbreak plantings in the Plains were initiated in the 1930's, there was a backlog of information available from the history of these old plantings, plus additional knowledge from state and federal experiment stations, to enable technicians and landowners to do a better job on windbreaks.

The dry thirties and the depression spurred on the great conservation movement, which in-

cluded the planting of trees for erosion control and the conservation of soil and water. People were provided government-financed employment and millions of trees and shrubs were planted. The U. S. Forest Service Prairie States Forest Project, for example, supervised the establishment of approximately 220 million seedlings in Plains States, from 1936 to 1942, on 30,223 farms. These field windbreaks stretched out over 18,600 miles and covered 240,000 acres. The majority of these plantings are still in good condition and serving the intended purposes.

Prior to the soil conservation districts, the Soil Conservation Service through demonstration projects and CCC activities planted approximately 50 million seedlings in the Great Plains. These were mostly windbreaks and erosion control plantings.

At present, windbreaks in the 10-state Plains and Rocky Mountain area are planted from the eastern Dakotas westward to the Rocky Mountains and south to New Mexico and the panhandle of Texas. Approximately 580 soil conservation districts in this vast area include farmstead and field windbreaks in their local soil and water conservation work. Accomplishments in 1954 indicated the planting of approximately 21,000 acres of field and farmstead windbreaks on 9,800 farms, and include 1,100 miles of field type windbreaks. During the past 10 years, plantings have been made on some 100,000 farms and ranches. Technicians estimate an additional need for 135,000 miles of field windbreaks in this area and a combined acreage of farm and field windbreak planting of close to 1¼ million acres.

The Great Plains region is subject to a wide array of climatic and weather extremes, with periodic spells of high velocity winds. Temperature extremes range from a low of -48° to a high of 115°. During drought years precipitation may be only half of normal, or less.

Most people living here have a liking for trees, and their crops and home surroundings are usually benefited by the shelter of nearby windbreaks.

Note.—The author is woodland conservationist, Soil Conservation Service, Denver, Colo.



Young farmstead windbreak several months old. Owner is especially proud of his work, as evidenced by the fine cultivation and control of weeds. He has an older windbreak in background and has decided to enlarge his planting with the new windbreak.

Farmstead windbreaks, which protect garden, orchard, livestock, wildlife, and home itself from hot and cold winds and drifting snow, pay for their cost in a few years. The 2 or 3 acres devoted to a farmstead windbreak is one of the best possible uses to which this land can be put. Properly designed and planted, it will serve its purpose a long time. Hundreds of owners say that they would not be without one, that it adds hundreds of dollars to the value of a farm or ranch. Often a native fruit species is added to grow fruit for home use. Wildlife benefits from a windbreak. Livestock gains are greater and less feed is needed when wintered behind its shelter. House heating costs are 15 to 30 percent less. The inconvenience of snow-drifted yards can be largely eliminated with a good planting. Shade and recreational benefits constitute another advantage. A community with numerous trees adds a feeling of security and a home atmosphere which cannot be found in treeless communities.

Field windbreaks protect adjacent crops and help to reduce soil blowing. The protected area or zone of influence extends out 20 to 30 times the height of the trees to leeward and several times out to the windward side of the planting. Thus, a 30-foot wind-

break effectively protects a strip approximately 700 feet wide, provided the wind is blowing at right angles. Maximum benefits can only be derived by the planting of a series of tree strips, or by enclosing 20- to 30-acre fields by windbreaks on the south, west, and north.

Innumerable landowners testify to the long-range benefits they are experiencing from field windbreaks. Many claim a decided reduction in soil blowing. Others note that sandblasting of crops is reduced, that they do not have to replant their fields. Still other farmers have observed less lodging of grain and blowdown of cotton and corn. In the north the collection of snowdrifts benefits adjacent crops due to added moisture. Field windbreaks are no cure-all for soil blowing, but when used wisely and in areas where they can be successfully grown, their use is decidedly beneficial in the long run.

Soil conservation district supervisors and co-operators receive assistance in windbreak work from various sources. Extension and research agencies contribute to educational phases and help to develop interest and provide basic facts. The Agricultural Conservation Program Service provides incentive payments. State agencies, the Forest Service, and the Soil Conservation Service provide technical assistance.

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Sample of community pattern west of Dill City, North Fork of Red River Soil Conservation District, Okla. Horse-shoe-shaped and short belts on H. G. Blanton farm were designed to solve specific blowing problems and assist in special cropping plans

In the 580 soil conservation districts sponsoring windbreaks in the Great Plains, technical onsite assistance is provided by Soil Conservation Service woodland conservationists and other technicians. They are in position to assist cooperators in layout and design of windbreaks, and in their establishment and maintenance.

One of the main contributions to the windbreak work has been the districts' procurement

of mechanical tree planters. There are close to 400 in use at present, and more may be purchased. Mechanical weeders or hoes are also a more recent development. Since weeds and grasses often spell failure in a windbreak planting, any contrivance or any method which will ease the job of reducing weed competition, is a decided asset.

Windbreaks for better farming is not an empty phrase—it's a reality!